## Mouth-Watering Mangoes for Mass-Marketing

The perfect mango melts in your mouth. But many aren't perfect because this tropical fruit is susceptible to injury during cold storage. At temperatures below 50 °F, mango's skin becomes pitted and discolored and its flesh darkens and becomes susceptible to decay.

ARS and Mexican scientists recently discovered that methyl jasmonate prevents such chilling injury. This sweet-smelling compound derived from the essential oils of plants—especially jasmine and honeysuckle—is safe and relatively inexpensive. Fifty dollars' worth could treat truckloads of fruit.

Studies showed how to use methyl jasmonate to prevent chilling injury and dramatically improve overall fruit quality. The treatment worked on mangoes at various stages of maturity and didn't alter normal ripening and softening processes or increase water loss.

The researchers also learned to preserve fresh-cut mangoes by treating slices with a combination of hexylresorcinol, isoascorbic acid, and potassium sorbate—all food-safe compounds derived from natural products—and storing the slices in plastic containers to prevent drying.

Mangoes could be an attractive addition to the growing market for fresh-cut produce, but browning and drying have prevented such marketing. In 1998, the U.S. population consumed 412 million pounds of mangoes—an increase of 77 percent from 1993. *Chien Y. Wang, USDA-ARS Horticultural Crops Quality Laboratory, Beltsville, Maryland; phone (301) 504-6128, e-mail cwang@asrr.arsusda.gov.*

## Clearing the Air With Biodiesel

Buses and other diesel-burning vehicles will run cleaner if they mix soy-based biodiesel with their regular diesel fuel. To test the feasibility of switching to this fuel blend, ARS began a year-long demonstration at the Beltsville (Maryland) Agricultural Research Center in January. BARC has 65 vehicles operating on "B20," a 20-percent biodiesel/80-percent diesel mix.

This test is part of a federal effort to reduce reliance on petroleum and create new markets for U.S. crops. There is interest in permanently switching as many federal government vehicles as possible nationwide to alternative diesel fuels, using biodiesel from soybean and other seed oils or animal fat.

BOB NICHOLS (K8247-15)

**Many farm machines at ARS' Beltsville Agricultural Research Center are running on a mixture of diesel fuel and biodiesel, which is made from soybean oil.**

One goal is to increase the federal purchases of biobased fuel and other products by 10 percent each year for the next 5 years.

The demonstration may help encourage local governments and the private sector to do the same—especially in areas where air quality is an issue. Crop-based diesel burns cleaner and produces less soot, and vehicles don't need modification before being switched to the fuel.

Recent changes in the Energy Policy Act of 1992 allow for credits for biodiesel usage in existing vehicles, reducing the number of alternative fuel vehicles that must be purchased.

Future changes could also affect large municipal vehicle fleets, such as buses and public works vehicles. *Ronald F. Korcak, Associate Director of Beltsville Area, USDA-ARS, Beltsville, Maryland; phone (301) 504-5193, e-mail korcakr@ars.usda.gov.*

## Processing Alfalfa and Soybeans—on the Spot

New products and increased markets for alfalfa and soybeans may be on the horizon for Midwest farmers, thanks to innovative research by ARS and University of Wisconsin scientists in Madison. Following a concept long used by the petroleum industry—the separating, or fractionating, of crude oil into a variety of products of increasing value—researchers have tested the fieldside processing of harvested crops.

Until now, wet fractionation of alfalfa and soybeans has been performed at a central processing facility. But that necessitates transporting the herbage, containing about 80 percent water, from the field to the facility and then dehydrating the plant material and transporting the waste liquid back to the field as liquid fertilizer.

Last summer, under a cooperative research and development agreement with industry, a group of machines was used in the first fieldside demonstration of wet fractionation of soybean herbage. Commercially available machines, plus a modified hammermill—normally used to pulverize grain by forcing it through screens—were used to rupture the herbage without reducing fiber size.

Demonstrating the feasibility of the concept was the first step toward further development of a mobile field processor. Working like a combine, it would cut and wet-fractionate the crop while juice was being processed at the edge of the field.

Products such as cattle feed, chemical feedstocks, mats for filtering pollutants from water, enzymes derived by growing fungi on the fiber, and building materials can be made from the fiber portion. Products from the juice fraction might include food- and feed-grade protein concentrates, carotenoids, antioxidants, and industrially valuable enzymes. *Richard G. Koegel, USDA-ARS Dairy Forage Research Center, Madison, Wisconsin; phone (608) 264-5149, e-mail rgkoegel@facstaff.wisc.edu.*